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External Balance, Fiscal Policy, and Growth in Turkey

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How did Turkey – alone among high-debt countries – sustain high real growth after rescheduling its debt? Can it continue on a high growth path and manage its external debt?

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Since Turkey rescheduled its debt, its real GNP has grown 5 percent a year — compared with an average 1.2 percent for other high-debt countries.

How did Turkey translate the extra breathing space it got from foreign financing into sustained high real growth?

Turkey's financing needs for large public sector deficits generated high medium-term inflation and high real interest rates. But the thrust of Turkey's program was to keep savings and interest rates up and to improve export performance.

Turkey's well-directed public expenditure program supported the private sector through key investments in infrastructure, special incentives, and credit for export and investment.

Turkey also inherited substantial excess capacity from heavy investment made in the 1970s. This allowed for a quick improvement in output and exports once the exchange rate was aligned.

External debt does not threaten Turkey's creditworthiness. Internal adjustment is necessary for consistency with inflation targets, but tighter external policies are both unnecessary and potentially damaging to Turkey's growth prospects and internal balance.

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I. INTRODUCTION

Turkey has, alone among the high-debt countries, managed to maintain a high growth rate after rescheduling its debt. Its real GNP grew by 5% on average since 1980. By comparison, countries with recent debt-servicing problems, grew at only 1.2% since 1981¹, almost a four percentage point difference on average. At the same time, Turkey's debt-output ratio increased by an amount roughly similar to the increase in the debt-output ratio of the high-debt countries, from 28% at the end of 1980 to 56% at the end of 1986 (see Table 1).

In fact, it is surprising that Turkey's debt-output ratio did not increase a great deal more than it did in the high-debt countries. As a percentage of GNP, Turkey ran a much lower non-interest current account surplus than the high-debt countries did on average after their debt-crisis: -0.25 percent of GNP for Turkey over the period 1980-1986 versus +2.6 percent over 1982-1986 for the high-debt countries. This apparent inconsistency is explained by the higher growth rate that Turkey managed to sustain. Turkey's debt-output ratio followed a path similar to that of the high-debt countries, not so much because of large trade surpluses, but because of its high output growth coupled with continued access to foreign financing.

This paper discusses two issues this experience raises. One, how did Turkey translate the extra breathing space continued access to foreign financing gave it into sustained high real growth? In particular, what was the

¹/ Turkey's rescheduling exercise took place over the period 1978-80, before other debtor countries rescheduled their debt. Hence the shift in comparison period. The data for the high debt countries are taken from the IMF World Economic Outlook, October 1987. The WEO refers to this group as "Countries that experienced recent debt servicing problems". For brevity's sake, we refer to the same group as "high-debt" countries in this paper.

Table 1. MEASURES OF THE OVERALL DEBT BURDEN

	1980	1981	1982	1983	1984	1985	1986	1987 Est.
Turkey:								
Debt (US\$ billion)	16.3	16.9	17.6	18.2	20.8	25.5	32.5	37.3
Medium/long term	13.8	14.7	15.9	16.0	17.6	20.8	25.6	28.8
Short term	2.5	2.2	1.8	2.3	3.2	4.8	6.9	8.5
Debt/GNP	28.0	28.6	32.8	35.6	41.5	47.9	55.9	57.6
Debt/exports	284.1	198.3	175.0	192.9	180.5	194.5	260.5	227.2
Current Account Surplus/GNP	-5.0	-2.8	-1.6	-3.6	-2.8	-1.4	-2.6	-1.5
Non-Interest Current Account Surplus/GNP	-3.9	-0.8	1.2	-0.4	0.4	1.1	1.0	2.2
Countries with Recent Debt-Servicing Problems:								
Debt/GDP	32.5	37.6	43.7	47.6	47.6	49.1	51.3	53.9
Debt/exports	151.5	186.1	240.9	254.6	246.3	266.8	309.5	313.4
Current Account Surplus/GDP	-3.6	-5.9	-5.5	-2.0	-0.9	-0.5	-1.8	-1.5
Non-Interest Current Account Surplus/GDP	-0.5	-1.7	-0.5	2.8	4.1	4.2	2.5	2.6

Notes: For comparability the debt figures reported here for Turkey refer to gross debt. In the rest of the chapter net debt is used. See Page 4, footnote 1 in the text.

The debt-export ratio refers to year-end debt to exports of goods and services (and for Turkey also workers' remittances) during the year.

Countries with recent debt-servicing problems are defined as those which incurred external payment arrears in 1985 or rescheduled their debt during the period from end-1983 to end-1986.

Source: Undersecretariat of Treasury and Foreign Trade, Central Bank and World Economic Outlook (IMF), October 1987.

public sector's role in this process? Second, what are the prospects for a repeat performance? Can Turkey, in the years to come, reconcile external balance and sustained output growth?

To this end, we develop and apply to Turkey an econometric model designed to shed light on the public sector's role in the internal adjustment to external transfer targets. The central issue is, how to bring about a private savings over investment surplus that will reconcile external targets and fiscal deficits without jeopardizing output growth. The analysis focuses on two aspects of fiscal policy that can contribute to this goal.

First, the impact of aggregate fiscal deficits on external balance, and the way real interest rates can resolve potential conflicts between targets for the two. Second, the impact of the composition of government expenditure on output growth, in investment of course has a direct impact on potential output growth to the extent that it adds to productive capacity. This effect could be negated if public investment, either directly or through the impact of its method of financing, would reduce private investment. This issue is at the core of our empirical analysis.

In what follows we first present the analytical structure of the model (Sections II.A and II.B). The results of empirical estimation of the behavioral equations in that model are presented in Section II.C. This Section first deals with the impact of real interest rates on private consumption; a subsequent subsection links private investment to capacity utilization, real interest rates, the volume of credit to the private sector and variables relating to the size and composition of public investment expenditure. Finally, in Subsection II.C(iii), we establish econometrically the link between private and public investment and the growth rate of real GNP.

This model is then used in Section III to assess the public sector's role in Turkey's macroeconomic achievements since 1980. In Section IV the focus is on the future. We first assess Turkey's leeway on the current account if creditworthiness is to be maintained. We use a pragmatic approach due to Daniel Cohen (1985,1987) to quantify this issue. The model developed in this paper is then used to explore whether sustainability restrictions on fiscal deficits and the creditworthiness constraints on external borrowing leave enough room for satisfactory output growth. Finally we highlight the importance of continued access to foreign financing by presenting scenarios where such access is denied.

II. EXTERNAL DEBT, INVESTMENT AND THE PUBLIC SECTOR

A. Analytical Framework

The model presented here has been designed to shed light on the key question raised in this paper: can the objectives of external balance and satisfactory output growth be reconciled? What is the role of fiscal policy in this trade-off? The model is sharply focused on the role of fiscal policy, and hence covers only the essential relations necessary to explore the impact of fiscal policy on private savings and investment behavior, output growth and external balance. It is used in an analysis of the past in Section III, and then in Section IV in an exploration of the trade-offs between output growth, external debt and real interest rates.

Several channels are highlighted. First of all, the relation between interest rates, fiscal deficits and external balance. High real interest rates, by depressing private investment and consumption, create more room for fiscal deficits for any given external balance target. At the same time, high real interest rates complicate fiscal management, since they raise the cost of servicing the domestic public debt. Crucial parameters are the sensitivity of private savings and investment with respect to the real interest rate; these receive detailed econometric attention in Section II.C.

A second channel relies not so much on the interrelation between aggregate fiscal deficits, real interest rates and the current account, but more on the composition of government expenditure programs. A substantial part of total investment in Turkey is undertaken by the public sector. As a consequence, the allocation of government expenditure over consumption and investment is an important determinant of output growth for any given expenditure level. But not all public sector investment projects are as effective in promoting growth. The model highlights, in addition to the amount of public investment, the importance of its composition. Section II.C(ii) provides evidence that public investment in manufacturing actually depresses private investment. Thus the composition of public investment is an important determinant of its impact on private investment and hence on aggregate investment and output growth.

Final channels incorporated in the model are the effect of capacity utilization on private investment and, in addition to the impact of investment on output growth, a reverse impact of output growth on private savings and investment. These channels have been important in the past few years as Section III demonstrates, and are therefore incorporated in the model.

B. Real Interest Rates, Fiscal Policy, Output Growth: the Way the Model Works

If there is imperfect arbitrage between foreign and domestic interest-bearing assets, either because of imperfect substitutability or explicit capital controls, the link between foreign and domestic interest rates is severed. External targets can then be maintained even if fiscal deficits increase, as interest rate policy can be used to generate a matching higher net private savings surplus. If, alternatively, arbitrage causes domestic interest rates to closely follow foreign interest rates corrected for exchange rate depreciation, macroeconomic policy faces much tighter constraints: interest rates can no longer be used as an instrument.

This has become a more important issue with the introduction of foreign exchange deposit accounts (FX deposits) at the end of 1983. It is clear that interest rates on FX deposits form a floor for the level of domestic rates on comparable assets. Domestic rates below the rate obtainable on FX deposits (corrected for exchange rate depreciation) would almost certainly erode the domestic deposit base of the banking system as large scale shifts out of domestic deposits would take place. However, it is not so clear that arbitrage works in the other direction too. The time period since the introduction of FX deposits is too short to allow for formal econometric tests, but the volume of FX deposits would seem too small to force domestic interest rates down by massive shifts into domestic assets out of the FX deposits if any positive interest rate differential arises.

Figure 1 shows that domestic interest rates in Turkey have not been closely tied to foreign interest rates adjusted for depreciation of the exchange rate. The figure compares the nominal interest rate on 6 month time deposits with the nominal rate of interest on similar instruments in the USA. The latter are brought on a comparable basis by correcting them for the rate at which the TL actually depreciated against the US dollar over the period covered by the interest rates.² The figure shows that the rise in interest rates in 1985 and 1986 was well in excess of what can be explained from changes in foreign interest rates (after exchange rate correction). In fact the foreign rates corrected for depreciation fell significantly below their 1980-1984 average in 1985 and 1986 (see Figure 1A). The discrepancy is even

^{2/} The domestic equivalent of a foreign interest rate i^* thus becomes:

$$[(1+i_t^*)E_{t+1}/E_t] - 1$$

Figure 1

Figure 1A: DOMESTIC/FOREIGN INT RATES 6MO DEPOTS
FORWARD LOOKING-EXCHANGE RATES

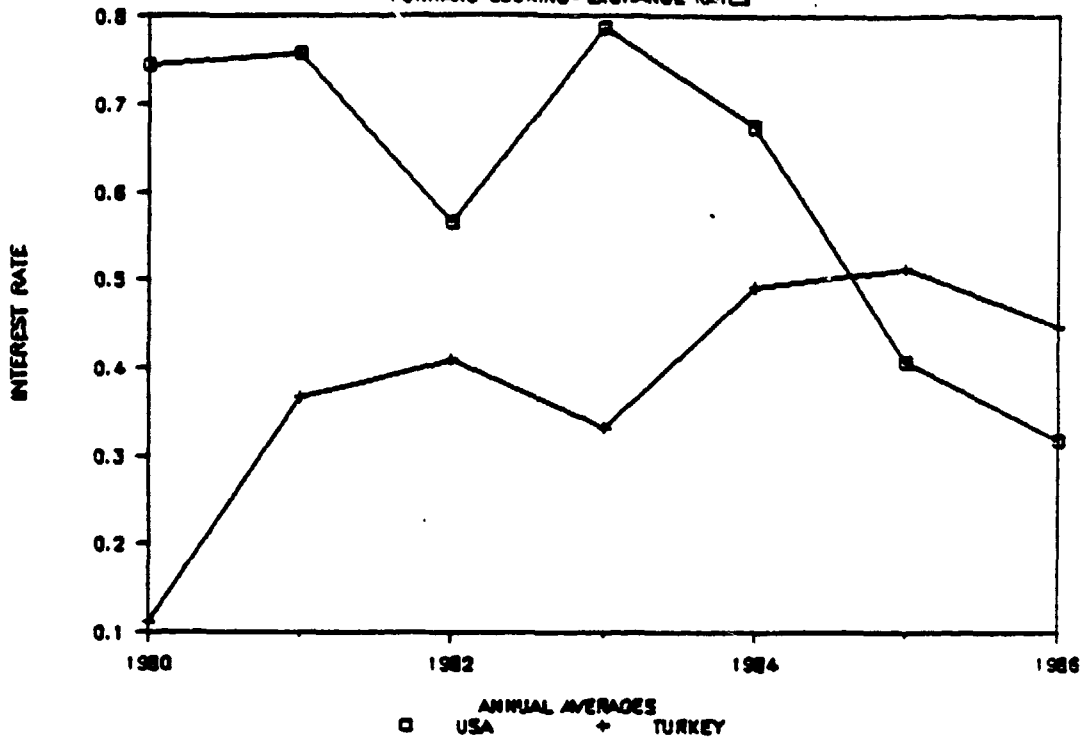
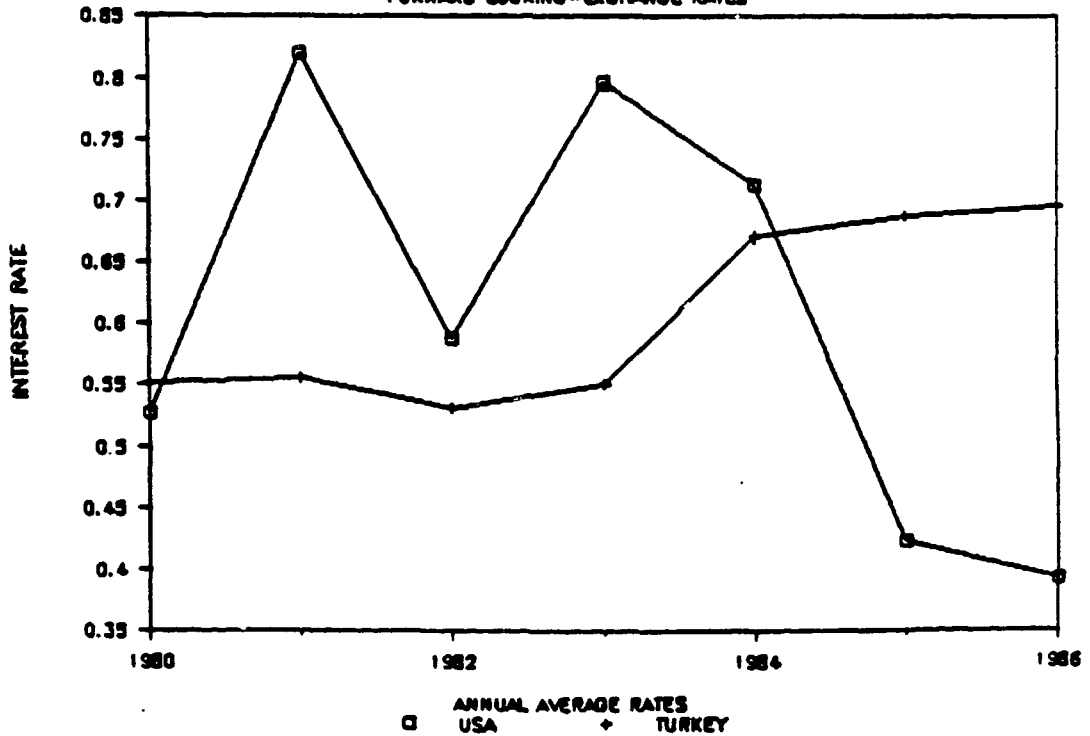


Figure 1B: DOMESTIC/FOREIGN LENDING RATES
FORWARD LOOKING-EXCHANGE RATES



more pronounced when lending rates are used as a basis for comparison (see Figure 1B). This is not surprising, since there is no arbitrage to narrow the gap between foreign and domestic lending rates. There is no competition between foreign and domestic banks in Turkey for business loans; domestic banks enjoy what amounts to a monopoly position.

As long as domestic interest rates are not linked to foreign interest rates (i.e. foreign rates plus exchange rate depreciation) there is an additional degree of freedom in macroeconomic policy. Then changes in domestic real interest rates can resolve potential discrepancies between fiscal deficits and external targets through their impact on the net private savings surplus.³ In the process, private investment and hence output growth will be affected. This is an important link between fiscal policy and output growth.

The mechanism of this link between fiscal policy and output growth is shown in Figure 2. Underlying this figure is the following identity, derived from the national accounts, but with behavioral content built into private savings and investment:

$$\begin{aligned}(1) \text{ CAS} &= \text{FS} + \text{NPS}(r) \\ &= \text{FS} + \text{Spr}(r) - \text{Ipr}(r)\end{aligned}$$

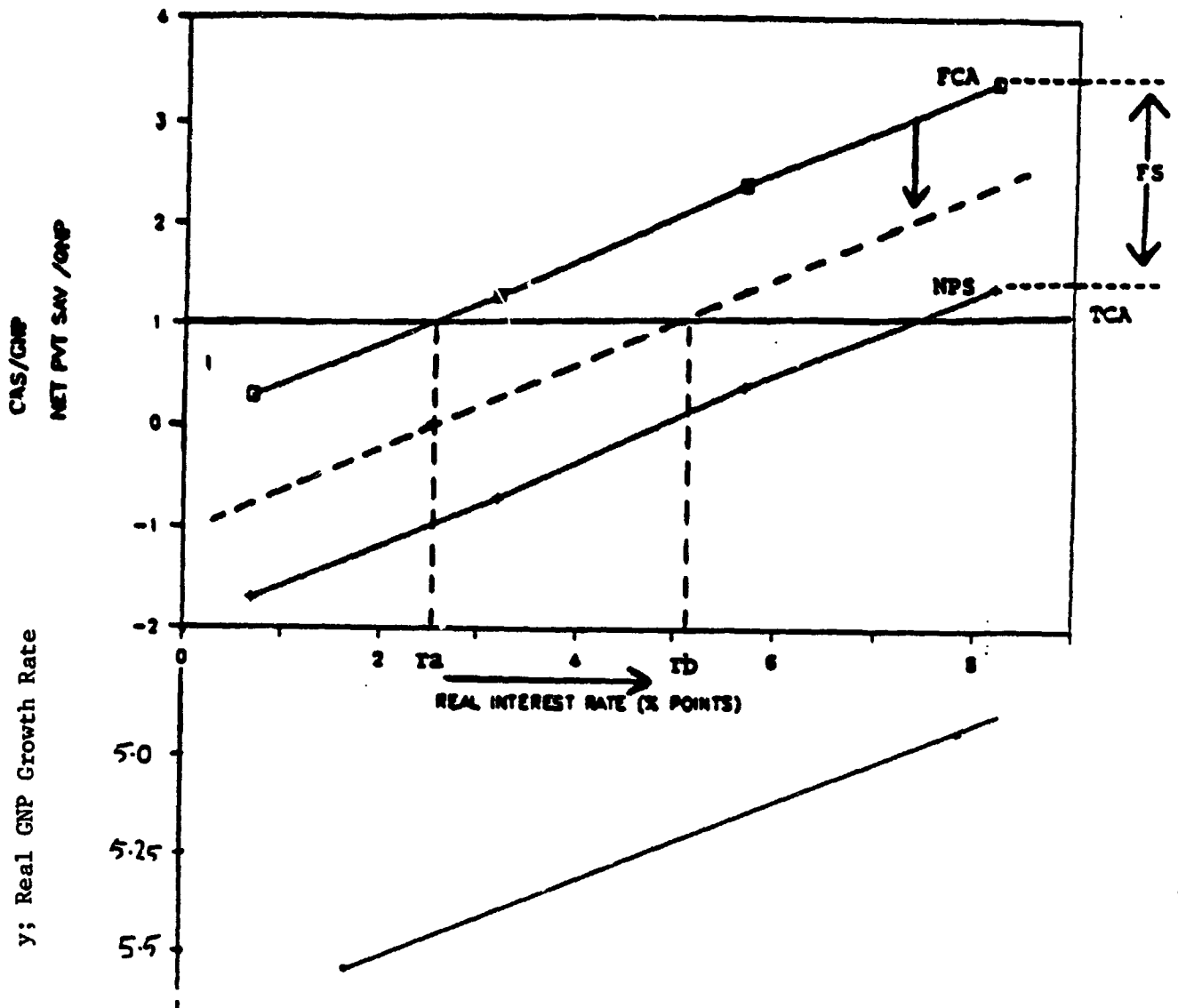
³/ Changes in deficits will only require changes in real interest rates to induce private savings surplus if private savings would not rise automatically in response to tax cuts. Such an automatic offset may take place if the private sector recognized that a cut in taxes without a matching cut in expenditure simply raises the taxes they will need to pay in the future. Then a tax cut would have no impact on private consumption. Thus deficits would have a one-for-one impact on private savings and no impact on either real interest rates or external balance. This is known as "debt neutrality" in the economic literature. Empirical tests strongly reject this assumption of "debt neutrality" for Turkey.

The private sector's surplus of savings over investment, $NPS - S_{pr} - I_{pr}$, is shown as a function of the real rate of interest. A higher real interest rate will slow down private sector investment and increase private savings, thus increasing NPS. Empirical evidence on these effects is presented in Section II.C. This is represented by the upward sloping line "NPS" in Figure 2. The external deficit that is compatible with given real interest rates (FCA for feasible current account) is then represented by the sum of NPS and the fiscal surplus (FS; this equals minus the deficit). The horizontal line TCA is the target value for the current account. The real interest rate at which the current account target TCA equals the feasible current account FCA is the real rate at which fiscal policy and current account targets are in line.

An increase in fiscal deficits represents a decline in the fiscal surplus and hence a downward shift in the feasible current account line FCA. To still meet the same current account target, a higher interest rate is needed to call forth the required extra surplus of private savings over private investment (r shifts from r_A to r_B). A cut in fiscal deficits will thus allow lower real interest rates for given current account targets, and hence higher private investment.

Whether real interest rates are indeed endogenously determined out of the interplay between external balance constraints, fiscal deficits and private (net) savings behavior, or whether consistency is achieved by administered setting of interest rates, or, for that matter, by arbitrage between foreign and domestic interest rates, is an issue we do not need to address here. What matters is that (econometrically verified) relations

Figure 2 FISCAL DEFICITS, REAL OUTPUT GROWTH AND REAL INTEREST RATES FOR GIVEN CURRENT ACCOUNT TARGETS.



- CAS ■ Current Account Surplus
- FCA ■ Feasible Current Account Surplus
- TCA ■ Target Current Account Surplus
- FS ■ Fiscal Surplus = minus Fiscal Deficit
- NPS ■ Net Private Savings Surplus
- Private Savings - Private Investment

between private savings and investment behavior and real interest rates imply a restriction on the fiscal deficit-current account target combinations that are possible for any given real interest rate; alternatively, it implies a restriction on fiscal policy if current account targets are to be met without maintaining real interest rates above those prevailing at world markets (corrected for real depreciation of the Turkish Lira).

The analysis so far is not enough to tie the link between fiscal deficits and output growth. It has focused on the impact of the fiscal deficit on private investment; output growth depends on total investment, however, not just on private investment. Clearly, the impact of changes in fiscal deficits on output growth depends on whether the underlying adjustment is made out of public investment or out of public consumption. The model therefore distinguishes between public consumption and investment. Output growth depends on the sum of public and private investment, a relation that is verified econometrically below (Section III.C(iii)):

$$(2) \quad \log(y) - \log(y(-1)) = \text{fct}((I_g + I_{pr}(r))/y).$$

For given public sector investment and fiscal deficit, equations (1) and (2) yield a negative link between output growth and improvements on the current account of the balance of payments. This can also be read from Figure 2. In the bottom quadrant, we represent graphically the relation summarized in equation (2). The top quadrants shows how higher real interest rates are necessary for a current account improvement for given fiscal deficit; the bottom quadrant then shows how these higher real interest rates slow down output growth through their impact on private investment. This conflict between external balance and output growth is of course at the core of the macroeconomic problems caused by the debt crisis.

C. Application to Turkey: Empirical Preliminaries

This Section presents the estimation of the parameters in the behavioral equations of the model. We first present a private consumption function. The next subsection shows the results for an investment function linking private fixed capital formation to capacity utilization, real interest rates and output. Finally we give , and a growth equation linking total fixed capital formation and real GNP growth investment.

(i) Private Consumption

Private consumption (CONKP, nominal consumption deflated by the CPI) depends on the real interest rate, the real exchange rate, inflation, current income, and a proxy for wealth ("permanent income"). The real interest rate used is defined as the highest (compound) interest rate on time deposits, net of taxes, and converted into a real rate using CPI inflation. The inflation term is CPI inflation.

Permanent income (a proxy for wealth) is approximated by trend growth in private disposable income. This trend is calculated by a regression of the logarithm of private disposable income on time, a constant, and a dummy to distinguish the period before and after 1978. The dummy variable takes the value zero before 1978 and one from 1978 onwards. It captures a level shift in the time path of real income associated with the severe downturn in 1978. Output growth has since recovered to roughly similar growth rates as the ones that characterized the pre-1978 period. Clearly, no catch-up has taken place with what output would have been if the 1978 downturn would not have taken place.

We therefore modeled the shift as a break in the level of income rather than in the coefficient of the time trend. The results of this regression are summarized in equ. (3):

$$(3) \quad \log(\text{PERYP}) = 4.47 + .058 \text{ TIME} - 0.10 \text{ DUMMY}$$

$$(16.4) \quad (13.5) \quad (2.01)$$

$$\bar{R}^2 = 0.97, \text{ D.W.} = 0.47$$

Temporary income TMPYP is defined as the excess of actual income over trend:

$$\text{TMPYP} = \text{YP} / \text{PERYP}$$

YP is actual disposable income, and PERYP the permanent component.

With these data definitions, the private consumption regression yields the following estimates:

$$(4) \quad \log(\text{CONKP}) = -1.54 - 0.82 \text{ LOG}(1 + \text{RDEP}) - 0.77 \text{ CPIinf}$$

$$(1.92) \quad (2.12) \quad (2.37)$$

$$+ 1.35 \log(\text{PERYP}) - 0.19 \log(\text{TMPYP})$$

$$(7.91) \quad (0.32)$$

$$R^2 = 0.96, \text{ DW} = 1.72, \text{ Sample Period } 1970-1986, \text{ TSLS}$$

The impact of the real after-tax deposit rate RDEP on private consumption is negative, and significantly so. In addition, private consumption depends negatively on inflation, with an almost equal coefficient. This has also been found in consumption analysis for some developed countries: in particular see Bean (1986) for similar evidence on the UK. Finally, the effect of permanent income on consumption is strongly positive, as expected, with a coefficient close to one. The coefficient on temporary income is low and insignificant (a t-statistic of only 0.32; significance requires a value of 2 or more). All these results fit in well with accepted theory of consumer behavior.

(ii) Private Investment

The investment equation is based on an eclectic "accelerator" model. Private fixed capital formation (ie investment net of stock changes) depends, first of all, anticipated future sales, proxied here by lagged output ($Y(-1)$; clearly data on current output are not available when investment decisions are taken). In addition, the real after-tax lending rate (RLEND), converted into a real rate using the GNP deflator, is used to capture the cost of funds.⁴ However prevalence of credit rationing and the use of credit subsidies suggest that quantities, in addition to prices, are likely to be important. This effect was captured, in an admittedly crude way, by including the ratio of credit to the private sector over output (CRD/Y) as an explanatory variable. In addition, capacity utilization in manufacturing (CPUTL) was included as a proxy of the ratio between expected sales and output capacity. The final explanatory variable is less conventional. The (lagged) share of infrastructure investment in total public investment, SHINF, is included in an attempt to assess the impact of allocation of public sector investment on private investment. The econometric results are remarkably good:

$$\begin{aligned}
 (5) \quad \log(\text{INFKP}) = & -15.68 + 1.24 \log(\text{CRD}/Y) \\
 & (4.20) \quad (2.52) \\
 & + 1.21 \log(Y(-1)) - 1.69 \log(1 + \text{RLEND}) \\
 & (6.49) \quad (4.17) \\
 & + 1.45 \log(\text{CPUTL}) + 0.35 \log(\text{SHINF}(-3)) \\
 & (1.40) \quad (1.15)
 \end{aligned}$$

$R^2 = 0.79$, $DW = 1.66$, Sample Period 1970-1986, TSLS

4/ See Chhibber and van Wijnbergen (1988) for documentation of the interest rates and various tax wedges that have been incorporated in the derivation of the lending rate figures, as well as for the theoretical basis and data to estimate the private investment equation.

The regression results show that both the quantity and the cost of credit have a strong and significant impact on private sector capital formation. The real after-tax lending rate has a negative sign and is significantly different from zero: the t-statistic equals 4.17. The credit variable too is highly significant. The precision of the coefficients on capacity utilization and on the share of infrastructure investment in total public sector investment is low, although they have the right sign.

(iii) Investment and Output Growth

The relation between investment and output growth is based on a simple production function approach. First, a measure of capacity output was derived by combining actual real GNP with the measure of capacity utilization used in the investment equation:

$$YKA = Y/CPUTL$$

This is an imperfect measure, since CPUTL applies to manufacturing only, and it is used to derive aggregate capacity, not just capacity output in manufacturing. No better measure was available however. Also, reliable data on labor use are not available. So in the end the equation estimated simply links capacity output to last period's capacity output and the share of total fixed capital formation in GNP:

$$\begin{aligned} (6a) \quad \log(YKA) &= 0.016 + 0.45 (INFT(-1)/Y(-1)) \\ &\quad (0.20) \quad (1.20) \\ &\quad + 0.94 \log(YKA(-1)) \\ &\quad (28.3) \end{aligned}$$

$$\bar{R}^2 = 0.98, DW = 1.67, \text{ Sample Period } 1970-1986, \text{ OLS}$$

This can be rewritten to yield an expression linking investment shares with the rate of output growth:

$$\begin{aligned}
 (6b) \quad \log(YKA) - \log(YKA(-1)) = & \\
 & 0.016 + 0.45 (\text{INFT}(-1)/Y(-1)) \\
 & (0.20) \quad (1.20) \\
 & - 0.06 \log(YKA(-1)) \\
 & (1.70)
 \end{aligned}$$

In the actual model used for the simulations, (6b) was used, with the coefficient for $\log(YKA(-1))$ on the right-hand-side set equal to zero.

III. FISCAL POLICY, PRIVATE SAVINGS AND INVESTMENT AND OUTPUT GROWTH

A. The Role of Fiscal Policy: an Outline

The introduction argued that Turkey has adopted a growth-oriented debt strategy rather than rely on sustained high surpluses on the non-interest current account to keep the debt-output ratio in check. The key factor determining success or failure of such a strategy is an internal adjustment program that relies sufficiently on reduced consumption rather than reduced investment to generate the internal surplus that is required. If consumption does not fall, either external targets or output growth will need to be sacrificed; the former if investment is not reduced and the latter if it is. In this section, it is shown how Turkey has by and large succeeded in doing so, and how fiscal policy has contributed to this achievement. However, the analysis also brings out that continued success of this strategy is being jeopardized by a deterioration in fiscal deficits and the ensuing reliance on the issue of high cost internal debt.

Any internal adjustment program designed to complement external balance targets has two components. The first issue concerns the extent to which the external transfer will be matched by a reduction in the fiscal deficit rather than an increase in the private sector savings surplus. The

second step focuses on the specific manner in which the matching private sector surplus is brought about, and is the subject of this section. It is here that the interaction between private sector savings and investment decisions and fiscal policy becomes important. The way consistency between internal policies and external targets is brought about determines whether fiscal plans and external targets can both be met without jeopardizing output growth: does the private sector run a surplus at high levels of savings and investment or at low levels? If the surplus is achieved by increasing savings for sustained investment levels, output growth can be maintained. If however the adjustment comes mostly out of investment cutbacks for given private savings rates, external adjustment is bought at the cost of lower output growth.

An obvious part of the solution is to shift government expenditure away from consumption towards investment. Table 2 shows the extent to which this was achieved in Turkey. As a consequence, the public sector savings rate (revenue minus current expenditure as a percentage of revenue) increased substantially over the period, in fact to levels not reached at any time since 1967 (see Figure 3). However, not much is gained by such a strategy if, in the end, additional public sector investment simply substitutes for reduced private sector investment. This was probably avoided in Turkey; private investment did not decline as a share of GNP between 1981 and 1985, and actually increased after that (Table 2).⁵ It is now in fact slightly higher than the level it reached during the period 1972-1980.

⁵/ Although almost the entire increase was due to increased housing investment.

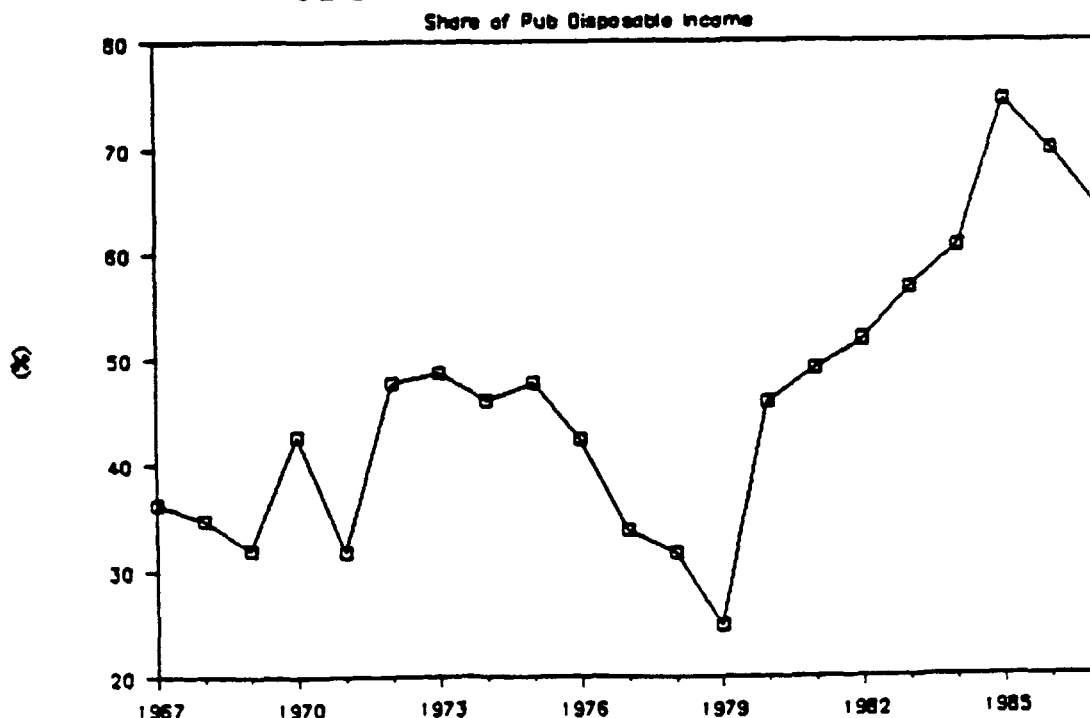
Table 2 KEY MACROECONOMIC INDICATORS
(Percentage Share of GNP)

	1980	1981	1982	1983	1984	1985	1986	1st Est. 1987	Rev. Est. 1987.
Total Consumption	84.1	82.0	81.8	83.7	83.3	80.9	77.7	77.9	76.5
Private	71.9	71.3	71.1	73.5	74.5	72.5	68.9	68.9	67.0
Government	12.3	10.7	10.8	10.2	8.8	8.4	8.8	9.0	9.5
Fixed Investment	19.5	18.9	18.9	18.8	18.0	20.1	23.6	23.7	24.9
Public	10.9	11.7	11.5	10.6	9.9	11.7	14.0	14.0	13.6
Private	8.5	7.2	7.3	8.2	8.2	8.4	9.6	9.7	11.3
Stock Changes	1.9	2.6	1.5	1.1	1.4	0.9	1.4	0.1	0.1
Public	0.5	1.5	0.5	-0.4	0.0	-0.2	0.1	-0.5	-0.1
Private	1.4	1.1	1.0	1.5	1.4	1.0	1.3	0.6	0.2
Current Account:	-5.5	-3.5	-2.2	-3.5	-2.8	-1.9	-2.3	-1.7	-1.5
Imports of goods & NFS	15.0	16.5	17.9	19.6	23.1	23.5	20.7	21.0	n.a
Exports of goods & NFS	7.2	10.9	14.5	15.7	19.5	20.7	18.0	19.3	n.a
Memo items:									
(in %)									
GNP growth	-1.1	4.1	4.5	3.3	5.9	5.1	8.0	6.8	
Inflation rate:									
CPI (year average)	110.9	36.8	23.1	31.4	48.4	45.0	34.6	38.8	

Source: SPO, SES

Figure 3

PUBLIC SAVINGS RATE: 1967-87



Finally, it is possible that government consumption cannot be cut sufficiently to make room for public sector investment and still reduce the fiscal deficit sufficiently to effect the external transfer. Table 2 shows that government consumption was reduced substantially from 12.3 percent in 1980 to 8.4 percent in 1985 and 8.8 percent in 1986; but public sector investment rose by almost the same amount. If, in that case, private investment should not suffer, sufficient private savings need to be generated to complete the internal adjustment effort. Section 3.3 analyzes the determinants of private saving and shows how interest rate policy has at least partially succeeded in restraining private consumption to the necessary extent. However, if interest rate policy is used to stimulate private saving, private investment will be reduced; hence the need to complement such a strategy with measures to promote private investment to ensure that the adjustment effort comes mostly out of private consumption rather than out of private investment.

This section focuses on the role that fiscal policy and real interest rates have played in bringing about these developments. First, fiscal policy may exert a direct influence on the net private savings surplus⁶ through real interest rate-based crowding-out. The overall fiscal deficit is important for this channel. A second linkage between fiscal policy and private savings and investment occurs through the composition of government expenditure rather than through the size of the deficit. A third channel involves neither the overall deficit nor the composition of government expenditure, but the way the deficit is financed. Monetization, inflation and more in general credit policy all influence private savings and investment behavior.

^{6/} Net private savings is private savings net of private investment.

In Turkey, fiscal deficits and the deficit on current account of the balance of payments have more or less moved in tandem during most of the 1970s and 1980s. This pattern was broken in 1986-1987, however, when fiscal deficits deteriorated, but the current account deficit improved. At the same time, real interest rates went up significantly. This suggests that high real interest rates were necessary to induce a higher net private savings surplus; this prevented the increase in fiscal deficits from spilling over into the current account. The importance of this mechanism for Turkey is demonstrated below.

However, several recent developments do not fit easily in this explanation. If high real interest rates created the room for higher fiscal deficits without a matching current account deterioration, how was Turkish output growth so high? High real interest rates presumably slow down at least private investment, thus slowing down output growth. To understand why this did not happen in Turkey, one needs to analyze more closely various mechanisms other than real interest rates and the size of fiscal deficits through which fiscal policy influences private investment.

A second channel through which fiscal policy influences the private sector depends not so much on the fiscal deficit, but on the composition of expenditure. Government investment itself results in capital accumulation. So negative output effects of fiscal deficits through real interest-based crowding-out of private investment can be offset to some extent by shifting the composition of government expenditure away from consumption to investment.

In addition to this direct substitution effect there is a more indirect channel through which the composition of government expenditure influences private investment. Public sector investment, especially in infrastructure, often stimulates rather than replaces private investment

expenditure. Public sector investment in, say, roads will make investment more attractive for the private sector in places that were inaccessible before. Section II.C(ii) demonstrated that this link is important empirically. This channel is a reason why private sector investment has in fact not suffered that much from the continued high real interest rates over the past five years.

B. Fiscal Policy and Capital Accumulation: Crowding-Out or Crowding-In?

Aggregate investment has recovered from the sharp cutbacks made during the macroeconomic turmoil of the 1978-1980 period. The share of total fixed investment in GNP is currently (1986-1987) 5.8 percentage points above the average over the five year period between 1967 and 1971.

By far the largest part of the increase in investment is due to higher public sector investment (see Figure 4). The ratio of public sector capital expenditure to GNP increased from 11 percent to 14 percent between 1980 and 1987. This shift in government expenditure towards investment is the main explanation of why output growth has not suffered from the mismatch between fiscal deficits and external targets and the resulting high real interest rates.

Private fixed investment, while increasing from the low point (7.2 percent of GNP) reached in 1981, has not recovered significantly beyond the levels reached in the early 1970s.

Empirical analysis shows that the high real interest rates have been an important factor behind the somewhat lacklustre performance of private sector investment.⁷

⁷/ The various channels through which public policy affects private investment are explained more fully in Chhibber and van Wijnbergen (1988).

Several factors have worked against this negative impact of high real interest rates, and explain why private investment has in fact been rising at all over the past five or six years. First, the Government has consistently provided generous investment incentives over this period. Second, except for 1984, the growth rate of credit extended to the private sector has consistently exceeded the rate of output growth, in most years by a substantial margin. Third, capacity utilization increased over this period. The final factor is more directly related to fiscal policy. At issue is the composition of public investment. Since 1980, the Government has shifted the composition of its public sector investment program heavily towards sectors where it complements rather than competes with private sector investment.

A counterfactual analysis of private investment (see Chhibber and van Wijnbergen 1988) that the negative impact of the high rates of interest dominated early on, but that their negative impact was gradually offset by the other measures discussed. From 1984 onwards, the impact of the positive measures more than offset the negative impact of real interest rates. By 1986, the net positive impact of the measures mentioned exceeded the negative impact of the high real interest rates by a full percentage point of GNP. This analysis therefore supports the view that the overall impact of fiscal policy and improved capacity utilization on private investment has been positive, the high real lending rates notwithstanding.

C. Real Interest Rates, Income Growth and Private Savings

Public investment increased substantially, while other measures helped to avoid the potential negative impact on private investment over the 1980-1987 period. At the same time, fiscal deficits deteriorated, but the deficit on the current account of the balance of payments was in fact reduced as a percentage of GNP. What made these apparently disparate developments

consistent was a substantial increase in private savings over the 1980-1987 period. Private saving reached a low point in 1983 at 5.9 percent of GNP, down from 7.8 percent in 1980; but it has been improving since 1985, to reach 11 percent in 1987 (see Figure 4). This section explores some of the reasons behind this improved savings performance and assesses its likely continuation in the future.

Rising real rates of interest have been a major contributing factor to the increase in private savings. The after-tax real rate of interest on one-year time deposits has risen from -3.5 percent in 1980 to almost 6 percent in 1984, and up to about 13 percent in 1987 (see Figure 5).

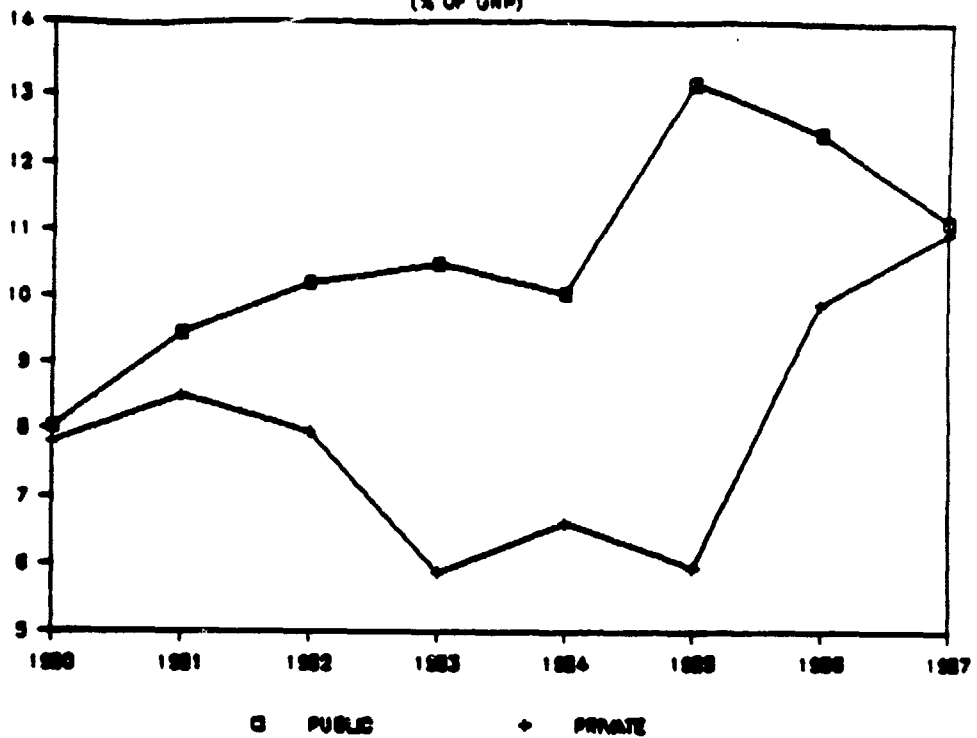
The sharp rise in interest rates since 1985 explains a substantial part of the even sharper rise in the private savings rate that has taken place since 1985. The econometric results summarized in Section II suggest that a 2.5 percentage point rise in the real interest rate increases NPS by 1 percentage point of GNP. Without the increase in real rates that took place since 1985, the econometric analysis suggests that savings would have been lower by around 0.8 percent of GNP in 1985 and by almost 2 percentage points of GNP by the end of 1986.

While interest rate developments explain much of the improved savings performance, the rise in savings since 1985 cannot be fully attributed to the increase in real interest rates that also took place since then. The econometric analysis suggests that of the 5 percentage points increase since 1985, only 2 percentage points can be attributed to the simultaneous rise in the real rate of interest.

Another important factor, especially in the past couple of years, may be that the higher than average growth in the economy and in private disposable income is perceived as only a temporary increase in income. Section II.C(ii) shows that the propensity to consume out of temporary income

Figure 4

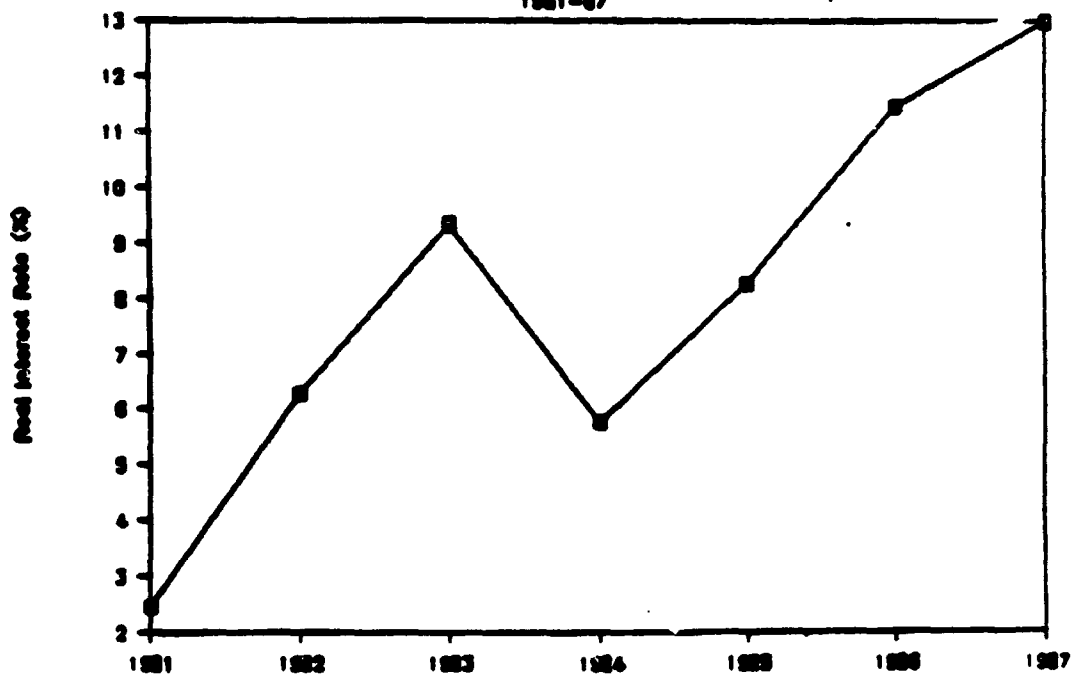
PUBLIC AND PRIVATE SAVINGS
(% OF GNP)



Source: SPO

Figure 5

REAL INTEREST RATE ON 1 YR TIME DEPOSIT
1981-87



is negligible. The perception that an increase in disposable income is temporary, rather than permanent, would therefore have a smaller effect on consumption, or alternatively, a larger effect on savings. This factor alone would account for an increase in the savings of about 1.5 - 2.0 percentage points in 1986 and 1987.

This explanation has important implications for what is likely to happen over the next few years. A decline in private savings should be expected once output growth returns to a more sustainable 5 or 6 percent. This would effectively make it much more difficult to continue the current level of fiscal deficits without once again increasing external imbalances. Reducing fiscal deficits, however, could have severe costs for output growth unless the cutbacks are properly designed. The trade-off involved is the subject of the next Section.

D. Fiscal Deficits, Interest Rates and Growth

Large fiscal deficits have not prevented a satisfactory current account performance. The price for this has been the need to maintain increasingly high real rates of interest. The empirical analysis presented shows that in Turkey such a policy is effective by restraining private consumption, and, to a lesser extent, private investment expenditure. Deleterious effects on output growth have until now been avoided. The analysis in the preceding sections identified high public sector investment as the most important explanation of why output growth did not slow down. This section uses the econometric model of section II to quantify this link.

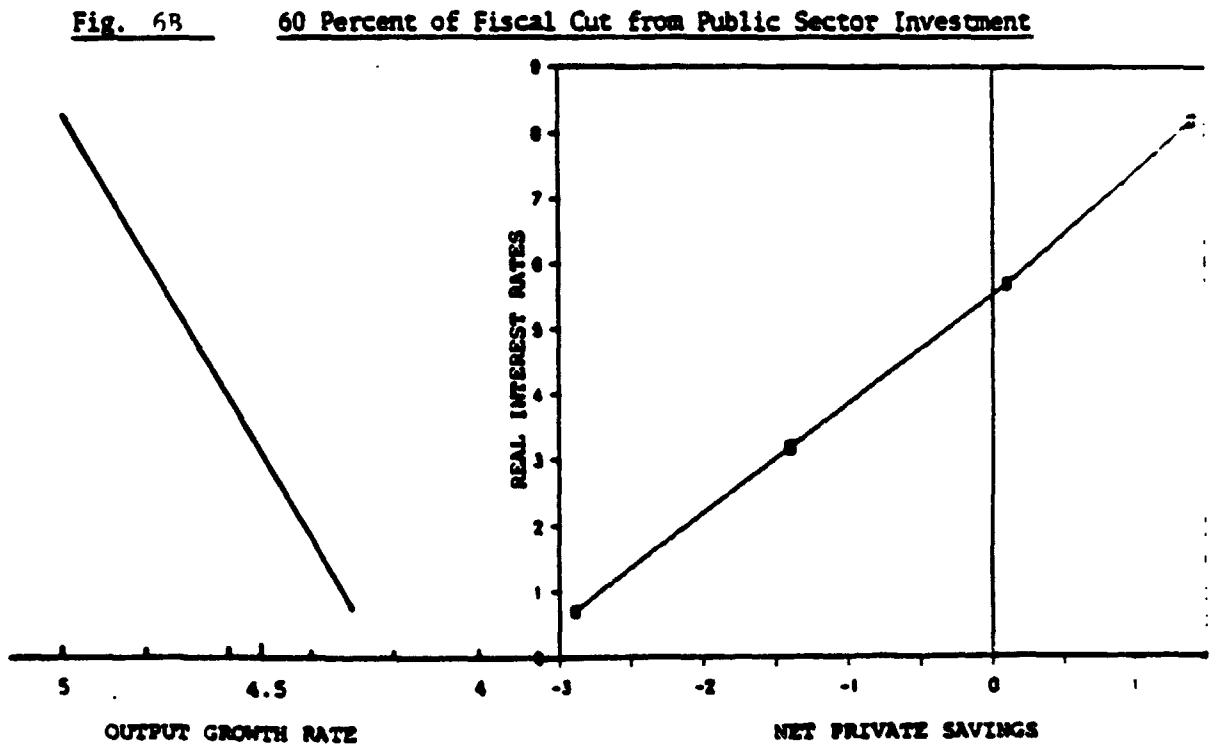
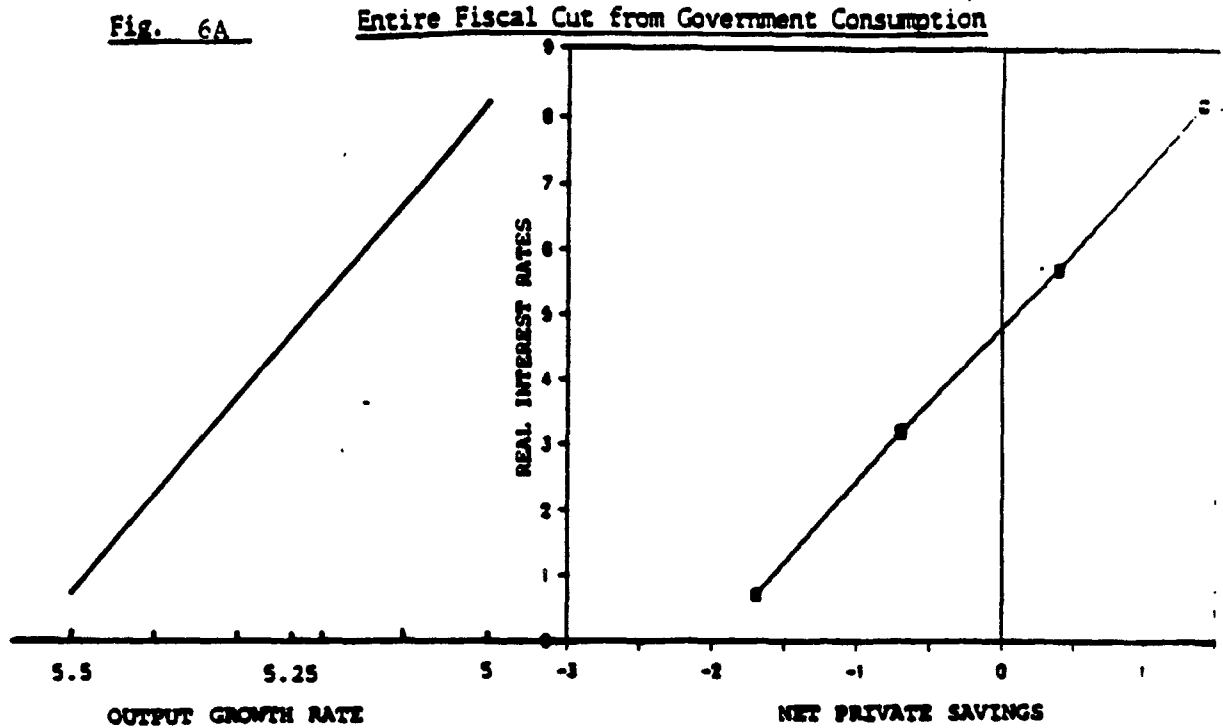
Figure 6 shows the results of simulation runs made with that econometric model. Interest rates were varied, but fiscal deficits were adjusted so as to maintain external balance targets. First, the fiscal cutbacks necessary to sustain external balance as interest rates are lowered were assumed to come entirely from government consumption. Public sector

investment remains constant by assumption. The figure shows that a five percentage cut in interest rates will cause a drop in the private sector's surplus of savings over investment of 2.1 percentage points of GNP (see Figure 6A, upper right).⁸ A substantial part of the decline in net private savings comes from increased investment by the private sector in response to the lower real interest rates. Since public sector investment was fixed by assumption, output growth goes up, by 0.5 percentage point of GNP on average over the five year period the model was run (see Figure 6A, upper left; the base run simulates the period between 1981 and 1986).

The results are very different when the fiscal cutbacks are assumed, perhaps more realistically, to come also from public sector investment rather than from consumption. Assuming that all government expenditure would be cut back proportionally implies that 60 percent of the cut comes from reductions in the public sector's investment program. The results are summarized in Figure 10B. Now while the lower interest rates stimulate private investment, the cut in public sector investment more than offsets this: as a result, output growth actually declines by an average 0.5 percentage point of GNP over the five year simulation period. Shifting from no cut in public sector investment to letting 60 percent of the fiscal adjustment come out of cutbacks in public investment therefore causes a full percentage point drop in GNP growth for the five years over which the model was run.

^{8/} In the run, the spread between lending rates and deposit rates was kept constant. A five percentage points cut in the borrowing rate thus implies a five percentage points cut in the lending rate too.

Figure 6 THE EFFECT OF CHANGES IN FISCAL DEFICIT ON INTEREST RATES AND OUTPUT GROWTH



Source: Based on results generated by the econometric model presented in Annex IV.

There is, moreover, a vicious circle aspect to this policy experiment. Cutting public sector investment reduces output growth, which in turn will lead to less of a private sector's savings surplus. As a consequence, fiscal deficits and hence public sector investment need to be cut further to maintain external balance, growth slows down more and so on. As a result, a five percentage points cutback in real interest rates requires a cut in the fiscal deficit of 2.1 percentage points of GNP if external balance is to be maintained through reduced government consumption. However, with 60 percent of the cuts coming from public sector investment, deficits need to be reduced by 2.8 percentage points of GNP, a full 0.7 percentage point of GNP more.

The analysis also suggests that there is some threshold at which the fall in public sector investment would just offset the increase in private investment triggered by lower real rates. If only 28 percent of the cut in government expenditure falls on public sector investment, the model results suggest that output growth will not be affected. A caveat concerns the medium-term nature of this model; a short run recession triggered by such a fiscal retrenchment could still lower output.

The arguments presented here do not imply a blanket endorsement of ever increasing public sector investment; public sector investment of course does come at a cost.⁹ They do highlight, however, that public sector investment has played an important role in Turkey's strong growth performance over the last few years. Moreover, they show that stabilization programs

⁹/ Other expenditure components need to be cut or alternative means of financing need to be found; each carries its own cost.

relying on reductions in public sector investment will have high and permanent negative output effects through the mechanisms demonstrated. These are in addition to any output effects that may arise because of short-run macroeconomic problems, which are not covered here.

IV. OUTPUT GROWTH AND EXTERNAL BALANCE: CAN THEY BE RECONCILED?

A. Looking Ahead: External Constraints, Fiscal Consistency and the Prospects for Sustainable Growth

The main issue now is, of course, can the successful performance of the past six years be repeated in the future? Can Turkey sustain a reasonable growth rate within the limits set by creditworthiness constraints? If so, what should the public sector do to bring this about?

To answer this question, one first needs to have some idea of what exactly these creditworthiness constraints imply. How much can Turkey borrow without bringing its creditworthiness in jeopardy? The answer naturally depends on the target real growth rate in Turkey itself and on anticipated growth rates in trading partners; an approach to quantify all these factors has been developed by Daniel Cohen (1985, 1987) and is applied to Turkey in Section IV.B.

Once the feasible current account deficit has been decided upon, a matching internal adjustment program needs to be set up. An internal adjustment program consists of a set of policies that will bring about a fiscal deficit and a private savings surplus over investment just enough to match the external current account target. The challenge is to design this package in such a way that total investment, private and public, will be high enough to allow output to grow at its target rate. This involves once again a two stage design. First how much should the public sector contribute to the required improvement in the surplus of aggregate savings over investment? The

issue here simply is, how much should the fiscal deficit be cut back. Rather than digress in esoteric discussions about optimal government borrowing, we take a more modest approach. We use a quantitative framework designed to answer the question: how big a fiscal deficit can the government afford without jeopardizing other macroeconomic targets? This is covered in Section IV.C. Once this has become clear, the difference between the targets for fiscal deficits and external balance need to be made up by the private net savings surplus. The issue is whether this will require real interest rates so high, that reasonable growth targets cannot be achieved anymore. This is the subject of the remaining part of the paper, Section IV.D.

B. Exports, Output Growth and External Borrowing

(i) Solvency, Creditworthiness and Foreign Debt

Assessing a country's room for external borrowing involves two considerations: solvency and creditworthiness. Solvency concerns ability to pay and is intricately linked to the non-interest current account, real interest and output growth rates, and, finally, the initial level of debt. To remain solvent, a country should not plan expenditures higher than its current and future income (discounted) minus its initial debt. This implies that the non-interest current account surplus should at least equal the initial debt

times the difference between the real interest cost of foreign debt and the real output growth rate.¹⁰

For most countries, solvency constraints are not very restrictive. Turkey's ratio of net foreign debt to GNP equals 51 percent. Even if the average real interest rate on its external debt remains as high as 8 percent, solvency would only require a surplus on the non-interest current account of one percent of GNP for a real output growth rate of 6 percent. The assumption in this chapter is an average real interest on foreign debt of 6 percent, so this would imply a lower limit of zero on the non-interest current account. A continued deficit on the non-interest current account would eventually jeopardize solvency at current levels of interest rates and projected output growth rates.

^{10/} The current discounted value of income less expense equals $(Y-C-I)/(r*-n)$ if real interest rates and growth rate constant. Y is national income before foreign interest payments; I aggregate consumption and investment expenditure; r^* the average interest rate on foreign debt; and n the real growth rate economy. $Y-C-I$ equals the non-interest current account surplus this expression should not fall short of the initial debt following must hold:

$$(1) \quad (Y-C-I)/(r*-n) > B^*,$$

or

$$(2) \quad NICA > (r*-n)B^*$$

Expressing NICA and B^* as shares of GNP and indicating them by case letters gives the expression discussed in the text:

$$(3) \quad nica > (r*-n)b^*$$

Strictly speaking, this formula is only valid if output growth and real interest rate are likely to remain roughly constant.

However, solvency is not the only consideration. Ability to pay does not necessarily imply willingness to repay. Creditworthiness (which depends on lenders' assessment of a country's ability and willingness to repay) therefore often imposes tighter constraints than solvency alone. Repayment requires not only a sufficiently high value of wealth to be able to repay, but also the generation of a surplus of traded goods production over traded goods consumption (net exports). This is likely to be much more burdensome in a country with most of its resources in non-traded goods sectors than in an outward-oriented country. But if it is more burdensome, a country might be more tempted not to repay, even if solvency requirements are met. Hence the importance of debt-export ratios in the assessment of creditworthiness.

Assessing the precise limits imposed by creditworthiness constraints is difficult for several reasons. First of all, while debt-export ratios are important, they are a biased estimate of the ratio of a country's debt to its output of tradable goods. Some domestically produced tradables are likely to be sold at home rather than exported. So the true measure lies somewhere between the debt-output ratio (which also counts non-tradables) and the debt-export ratio, which excludes tradable goods produced and sold at home. This chapter follows an approach pioneered by D. Cohen (1985, 1987). This approach chooses the ratio in between the debt-output (D/Y) and the debt-export (D/X) ratios in such a way that there are no incentives to overvalue or undervalue the exchange rate simply to mechanically improve creditworthiness indicators. The precise way in which this ratio is derived is presented in Cohen (1987); it is influenced by the price elasticity of export demand and output supply. The outcome for Turkey places a 60 percent weight on debt-export ratio and a 40 percent weight on the ratio of debt to GNP. This construct is referred to as the debt-resource ratio, D/R .

A second, more fundamental problem, involves not so much the choice of any particular creditworthiness indicator, but how to assess whether the value of the indicator chosen is too high or not (high values indicate low creditworthiness). An indicator is too high (creditworthiness too low) if at that value the burden of servicing the debt exceeds the likely penalty on non-compliance to repayment terms. The problem with this definition is that nobody really knows how high that penalty is. This section follows Cohen in a very simple but forceful approach to this issue. The cost of default is not known, but if a country has not defaulted at the current value of its debt-resource ratio, that value is, by implication, not yet too high. Otherwise the country would have defaulted already. A cautious borrowing policy than is a policy that will prevent a rising debt-resource ratio.

One important caveat: it does not follow from this analysis that a borrowing policy designed to rapidly lower debt-resource ratios is necessarily a good idea. While it is true that lower debt-resource ratios indicate higher creditworthiness, the transitional costs of reaching that lower ratio clearly raise the cost of servicing the existing debt. Since creditworthiness involves comparing the cost of default with the cost of servicing the current debt, such a strategy, which has been imposed on many high-debt countries, would lower rather than increase current creditworthiness.

(ii) Sustainable Current Account Deficits

How much foreign borrowing is compatible with maintaining the debt-resource ratio at its current value, and hence maintaining the level of creditworthiness? Since the debt-resource ratio is a weighted average of the debt-output and the debt-export ratio, it will depend on the growth rate of the borrowing country and of its trading partners. The growth rate of its

trading partners is one of the determinants of a country's likely export growth. The other determinant is the elasticity of demand for the borrowing country's exports with respect to income in the countries to which it exports.

Empirical analysis¹¹ suggests that the income elasticity of demand for Turkey's exports is high: 1.6 with respect to the OECD and 4 with respect to the oil-exporting countries in the Gulf region. This results in a weighted value of 2. Thus, if the weighted output in Turkey's trading partners¹² grows by 4 percent, Turkey's exports are likely to grow by 8 percent. The real exchange rate has no impact on the amount of feasible borrowing, as a consequence of its construction.

The results are presented in Table 3. The table gives the maximum increase in foreign debt that will avoid a rising debt-resource ratio, for different growth rates at home and abroad. The table lists increases in debt and hence gives the feasible current account deficit. The table lists on its vertical axis various alternative growth rates for Turkey, ranging from 3 to 7 percent. On the horizontal, top axis it lists potential growth rates for Turkey's trading partners, aggregated using their respective shares in Turkey's exports. The numbers indicate, as expected, that lower growth rates, whether at home or abroad, allow for less debt accumulation. In fact for zero growth rate at home and abroad, the formula indicates that no further borrowing is possible (this possibility is outside the range of the table). Raising the domestic output growth rate by 4 percentage points allows an extra current account deficit of 1.5 percent of GNP for given foreign output growth

^{11/} See Anand and van Wijnbergen (1988) for documentation.

^{12/} Weighted by their share in Turkey's exports.

rate. A slump abroad lowers borrowing potential: if growth in trading partner countries falls from, say, 4 percent to zero, the amount of feasible debt accumulation goes down by 0.3 percentage points of GNP.

Table 3: ALLOWABLE FOREIGN BORROWING: SUSTAINABLE CURRENT
ACCOUNT DEFICITS
(percent of GNP)

Output Growth of Turkey %	0	1	2	3	3.5	4
3	1.12	1.21	1.29	1.38	1.42	1.46
4	1.49	1.58	1.66	1.75	1.79	1.83
5	1.87	1.95	2.04	2.12	2.17	2.21
6	2.24	2.33	2.41	2.50	2.54	2.58
7	2.61	2.70	2.78	2.87	2.91	2.95

In section IV.D it is argued that a 6 percent output growth rate is feasible for Turkey if some policy adjustments are implemented. Also, the IMF and the World Bank project growth rates in the world economy that yield a combined weighted growth rate for Turkey's trading partners of 3.5 percent for the next five years. The table suggests that this implies a feasible current account deficit of 2.5 percent of GNP for Turkey. This is about the same level as in 1986 (2.6 percent of GNP) and substantially larger than the current account deficit of 1987. The consequences of alternative levels are pursued in Section IV.D.

How does this "allowable" current account deficit compare with the solvency constraint? At the projected average real interest rate on foreign debt of 6 percent, a current account deficit of 2.5 percent of GNP translates into a non-interest current account surplus of 0.5 percent of GNP at the

current debt-output ratio.¹³ The solvency constraint implied a zero non-interest current account for a real interest rate of 6 percent, so this result confirms what was argued before: creditworthiness constraints are tighter than solvency constraints.

Furthermore it is assumed that all the additional foreign borrowing is available to the public sector. This is probably reasonable, as not much foreign borrowing is expected by the private sector other than inflows into the commercial banking system through FEDs owned by non-residents. These are in any case probably better interpreted as remittances in disguise and should possibly be counted as above-the-line inflows rather than capital account transactions.

C. Macroeconomic Consistency, Foreign Borrowing and the Public Sector Deficit

Macroeconomic consistency requires more than keeping external deficits within the limits set by solvency and creditworthiness. Domestic output growth, inflation targets and internal debt management all have implications for the financing of public expenditure. In van Wijnbergen, Anand and Rocha (1988) we developed a quantitative framework to derive what these targets imply for the size of the financeable deficit. This was defined as the deficit that does not require more financing than is compatible with

^{13/} Interest payments (percent of GNP) = $r^* \cdot b^*$
= $6 \cdot 0.51$
= 3 (percent of GNP)
where r^* = real interest rate on foreign debt;
 b^* = debt-output ratio.

Therefore, if the current account equals -2.5% of GNP, the non-interest current account surplus equals $-2.5 + 3 = 0.5\%$ of GNP.

sustainable external borrowing, existing targets for inflation and output growth, and a sustainable internal debt policy.¹⁴ This Section explores the sensitivity of the outcome of that exercise to the assumptions made on debt management and output growth.

In the "base case" derived in the aforementioned paper, a number of assumptions were made about what can roughly be summarized as debt management. Internal debt issue was targeted at maintaining a constant debt-output ratio; external debt issue at maintaining a constant debt-resource ratio, in line with the analysis of Section IV.B; finally, the assumption of a constant real exchange rate from 1988 onwards precluded any capital losses on foreign debt. All this adds up to a required deficit reduction of 1.2 percent of GNP compared to the deficit the government ran in 1986, if at least a target of 20 percent inflation is to be met.¹⁵ Changes in these assumptions, in particular concerning debt management and output growth, are discussed in this Section.

(i) Fiscal Implications of Debt Management

What would have happened if Turkey had not followed its policy of a relaxed external deficit and only moderate internal debt issue? In particular, what are the fiscal consequences of a debt substitution policy

^{14/} A simple version of this framework was first used in Anand and van Wijnbergen (1987). The current version incorporates external debt considerations and implications of the financial structure for inflation tax revenues. It is presented in van Wijnbergen, Anand and Rocha (1988).

^{15/} The deficit has increased substantially since, by almost 4 percentage points of GNP; consistency with the targets mentioned therefore will require a commensurately larger cut back in fiscal deficits.

followed in many debtor countries? Many of them in effect paid off relatively cheap external debt from revenue raised by issuing much more expensive domestic debt.

Assume that Turkey had not increased its external debt at all between 1980 and 1986, other than what was caused by capital losses due to exchange rate depreciation, but instead had issued internal debt. In Anand, Chhibber, Rocha and van Wijnbergen (1988) we showed that after correction for cross-currency exchange rate fluctuations and real depreciation of the TL, Turkey's debt-output ratio went up by only 13.8 percentage points of GNP. The rest was due to capital losses. What would have happened if Turkey, instead of increasing its external debt-output ratio by 13.8 percent of GNP, had issued an equivalent amount of internal debt instead?

First the results of a mechanical debt swap: a once-off sale of domestic debt to retire an equivalent amount of external debt. This effectively amounts to a debt-buy-back scheme. This experiment considers only the budgetary consequences of changing one type of debt instrument for another. It does not consider the transfer problem associated with effecting any transfer of resources to foreigners; this issue is taken up below.

Such a scheme becomes problematic when domestic real interest rates are substantially higher than the average real interest cost of foreign debt. In that case the budgetary situation deteriorates. This would also be an issue in Turkey: over the 1988-1992 period, real rates at home are projected to be 6 percentage points above the average real cost of foreign debt. As a consequence, the increased interest burden caused by such a debt swap would raise the actual fiscal deficit by 0.8 percent of GNP in each subsequent year, and the required deficit reduction for consistency with 20 percent inflation

risers to 2.1 percent of GNP, up from 1.2 percent of GNP in the base case. Alternatively, the equilibrium inflation rate would jump to 85 percent per year, up from 50 percent, if no fiscal adjustment would be undertaken.

A straight asset swap was, however, not the form in which this debt substitution was implemented in most high-debt countries. In order to effect the implied transfer to foreigners, the government needs to find a way to increase either its own surplus or the net private savings surplus by a matching amount. Typically, the domestic counterpart of the increased external transfer was a gradual increase in domestic debt issue, absorbed through an increase in the private net savings surplus. This in turn required higher real interest rates. Such a strategy would be much worse from a budgetary point of view. The reason is that this scheme would in fact raise the cost of the internal debt beyond its already high level and thus worsen the impact on the budget further. Assume that such a debt substitution strategy would be implemented over the next five years, the time horizon taken in this chapter. Since over that period real interest cost of foreign debt is assumed to equal the real output growth rate, the entire adjustment would need to come out of the non-interest current account. To achieve the target reduction of 13.8 percentage points of GNP over a five year period thus requires a substantial positive shift (2.7 percent of GNP, 13.8 divided by 5) in the non-interest current account in each year.

Inducing an increase in net private savings requires a rise in the real interest rate. The empirical analysis in Section II suggests that such a large increase requires an increase in domestic real interest rates of almost 7 percentage points. This would not only raise the servicing costs of the additional domestic debt created during such a policy, but also the cost of debt incurred earlier as it gets refinanced. This is important because by now most of Turkey's internal debt has a short maturity (by December 1986, 76

percent of the internal debt had a maturity of one year or less). The impact on the budget would be large. To sustain consistency with a 20 percent inflation target after such a debt substitution policy would now require a reduction in the fiscal deficit of 3.6 percent of GNP. This is almost double the adjustment necessary after a straight asset swap. The budget deterioration would in fact be so large, that covering it through monetization would no longer be feasible. Increased debt issue would be even worse because of the high real interest rates. Finally, external debt would not be available by the very design of the scheme, which was to reduce external debt. A fiscal cutback would thus be unavoidable and would have to be substantial. This raises the issue of whether output growth could in fact be sustained. This is explored further in Section IV.D, but the numbers presented here should already indicate that it is highly unlikely.

(ii) Fiscal Implications of Different Rates of Output Growth

Higher growth allows more internal debt issue, since the target is a constant debt-output ratio; it will also increase demand for real money balances by both banks and the private sector, thus increasing the scope for revenue from monetization for any given inflation rate. Hence more growth allows a larger deficit and less need for fiscal adjustment. This is at the core of the conflict between stabilization policy and growth: if stabilization policies cut output growth, further fiscal adjustment is needed for macroeconomic consistency. This adjustment may, in turn, slow growth further.

Table 4 indicates the extent of the trade-off. A four percent growth target instead of 6 percent reduces financing room by about one percentage point of GNP: for a 20 percent inflation target, the required deficit reduction for consistency with a 20 percent inflation target (RDR) becomes 2.3 percent of GNP at 4 percent real growth instead of 1.2 percent at 6 percent real output growth. A major recession brings it out more starkly: a sustained

period of only 2 percent growth in real income would raise the required adjustment necessary for consistency with a 20 percent inflation target to no less than 3.3 percent of GNP. Numbers this large raise the spectre of self-fulfilling prophecies: a deficit reduction this severe could easily validate the low growth rate on which it was premised.

Table 4: FISCAL IMPLICATIONS OF OUTPUT GROWTH

Output Growth (percent)	Required Deficit Reduction for a 20% Infl. Target (percent of GNP)
2	3.3
4	2.2
6	1.2

D. External Borrowing and the Potential for Continued Output Growth

The analysis has until now focused on the revenue the government can expect from various sources of financing given its macroeconomic targets. Reducing the fiscal deficit to what is financeable given those macroeconomic targets makes sure that the fiscal policy is at least sustainable. If this adjustment is made, achieving the stated macroeconomic targets will not be jeopardized by fiscal crises, high inflation or escalating interest payments. However, it does not guarantee that those macroeconomic targets can or will be achieved; only that the fiscal deficit is not inconsistent with them. Whether the targets can be achieved is taken up in this Section.

The central question is whether external restraint and consistency requirements for fiscal deficits leave enough room for public and private investment and satisfactory output growth. Can external balance and output growth be reconciled, or is there an inherent conflict between these two

objectives? This Section provides projections generated with the models developed in Section II and in van Wijnbergen, Anand and Rocha (1988) that should allow an answer to this question.

(i) The Base Case: Creditworthiness and Sustainable Growth

The projections incorporate the restrictions on the current account that creditworthiness implies (see Section IV.B). Thus, the external borrowing limit is 2.5 percent of GNP. This is in fact a more liberal target than the low current account deficit of 1987. Besides more leeway on the external account, it is also assumed that the fiscal corrections necessary for macroeconomic consistency will in fact be implemented. This means a reduction in the fiscal deficit of 1.2 percent of GNP with respect to 1986. Compared with 1987 the cut in the fiscal deficit should be substantially larger. Public sector investment was assumed constant in real terms in 1987, and, by assumption, grows at 5 percent in real terms thereafter. This implies a slow gradual reduction in the share of public sector investment in GNP.

A lower fiscal deficit combined with a more liberal current account target allows for a fall in the surplus of private savings over investment. This is exactly what lower real interest rates will bring about. The decline in the fiscal deficit, if implemented, allows a gradual fall in real interest rates of 3 percentage points over the period 1988-1992. Private saving falls from the high levels achieved in 1987 to a still respectable 11.8 percent of GNP at the end of the period. Lower real interest rates also lead to an increase in the share of private investment in GNP, which rises by one percentage point of GNP over the period. This is just enough to offset the assumed gradual slowdown in the rise of public sector investment. As a result private investment increases its share in total investment by 4 percentage points. The share of total capital formation remains at around 20 to 21 percent of GNP. The most important result follows from this: output growth is

maintained at an average growth rate of 6 percent throughout the period. This is a respectable growth rate by comparison to the 1980-1985 average, although below the performance in 1986 and 1987. Accelerating inflation and falling inventories strongly suggest however, that the average growth rate of almost 7.5 percent over 1986 and 1987 was caused by unsustainable aggregate demand pressure. Continuation of such a high growth rate is therefore probably incompatible with stable macroeconomic performance unless much higher investment rates would bring aggregate supply in line with aggregate demand.

Real interest rates on foreign debt were projected to average 6 percent over the planning horizon; this implies that with a 6 percent real growth rate, real interest payments do not by themselves lead to further increases in the debt-output ratio. As a consequence, the ratio of net debt to output stays roughly constant at around 53 percent of GNP. This suggests the main conclusion: if fiscal restraint measures are implemented to restore consistency with other macroeconomic targets, sustained output growth is possible without escalating foreign debt.

Four caveats should be stressed at this point. First of all, the scenario depends heavily on the actual implementation of substantial fiscal correction. There is no accurate information on fiscal deficits in 1987 yet, but indications are that the deficit has increased substantially beyond what it was in 1986. The corrective measures necessary for the base case scenario to be feasible are commensurately larger.

Second, the scenario assumes that the bulk of the fiscal correction will come from current expenditure, subsidy cuts or tax increases. Public sector investment was assumed constant in real terms in 1987, and increasing at slightly below the growth rate of the economy after that year (5 percent

instead of 6 percent). If the fiscal adjustment comes from public sector investment in addition to the small decline with respect to GNP assumed here, growth performance will fall short of the base case projections.

Third, no further real depreciation of the exchange rate is projected beyond 1988. Exports are predicted to grow at 7 percent in real terms in this case.¹⁶ If instead a policy of real exchange rate depreciation would be followed, the debt-output ratio would increase faster due to the capital losses incurred after a real depreciation.¹⁷

Fourth, the scenario assumes that the foreign financing necessary to cover a current account deficit of 2.5 percent of GNP will indeed be forthcoming. This will require additional financing, since Turkey has just entered a period of substantially increased repayment obligations. The implicit assumption is that these can be refinanced, and that additional funds will be available to allow a current account deficit of 2.5 percent of GNP. Of course, in the current external environment it is conceivable that additional funds cannot be raised. Section IV.D(ii) therefore considers what will happen if this additional financing will in fact not materialize.

^{16/} Output in Turkey's trading partners is projected at 3.5%. This is an export-weighted average of growth rates assumed in the World Development Report for the OECD and the Middle East. Econometric evidence presented in Annex II shows an income elasticity of Turkish exports of about 2, which explains the 7 percent real growth rate for exports.

^{17/} Of course, by virtue of its design, the debt-resource ratio would not increase after such a policy. The debt-export ratio would decrease enough to exactly offset, at the weights chosen, the increasing debt-output ratio.

(ii) What Happens to Growth if Foreign Financing is Cut Back?

The results are dramatically different if a cutback in the current account deficit is imposed. This alternative assumes a zero current account deficit throughout the simulation period.¹⁸ The internal adjustment is brought about by a matching cut in public sector investment. The impact on output growth is severe: by 1992, the growth rate has fallen by two full percentage points. Output growth falls by 1.5 percentage points on average over the five year period.

Both private savings and investment fall under the impact of slower growth, but savings by much more than investment: the latter declines by 0.5 percent of GNP at the end of the simulation period, while private saving falls by 1.8 percentage points of GNP. Net private savings therefore declines by 1.3 percent of GNP over the simulation period. This has further adverse effects on fiscal policy: to still maintain external balance, a further round of fiscal cutbacks is needed. By the end of the period, fiscal deficits need to be cut back by 4 percentage points of GNP instead of just 2.5, the initial current account cutback. This is a vicious circle many high-debt countries that follow such orthodox policies encounter. Fiscal retrenchment to achieve external balance causes a slump at home, which necessitates more of the same measures that triggered the slump to begin with. By the time this destabilizing process has worked itself out, output growth has declined a full 2 percentage points per year.

^{18/} The current account deficit concept used includes only real interest payments; a zero current account deficit thus corresponds to a deficit at positive world inflation rates and positive foreign debt. World inflation is the rate of change in the dollar-based foreign price index used in the real exchange rate calculations.

The "stabilization program" does yield benefits on the external account. The debt-output ratio falls, although by less than the cumulative current account cutback: 8.9 percentage points of GNP versus a cumulative current account improvement of 12.7 percentage points. The almost four percentage points shortfall is due to the slowdown in output growth: the fall in output growth reduces the beneficial effects of the current account cutback on the debt-output ratio by almost a third.

A second mode of response would be for the public sector to shift the burden of adjustment to the private sector. It could do so by covering the external transfer through increased issue of internal debt instead of by adjusting its fiscal deficit. This would create a situation that is very similar to the second debt-substitution scenario discussed in Section IV.C(i). The outcome would be an almost six percentage point increase in real interest rates, which the government would have to match when issuing its own securities. This would rapidly deteriorate the fiscal situation even without much further debt issue because of rising interest payments on existing debt. The analysis in Section IV.C(i) demonstrated that the resulting deficit would be too large for financing through monetization. However debt issue at interest rates so far above the real growth rate of the economy would lead to rapid escalation of debt service obligations.

This scenario is in many ways the worst case scenario: no external funds forthcoming, and a failure of the public sector to adjust to this situation. Macroeconomic stability would be in doubt in such circumstances. It is by no means a likely scenario, but serves a useful purpose. It demonstrates the need for additional foreign financing, coupled with fiscal policy adjustments to restore consistency with a growth-oriented debt strategy. The alternatives are either a slowdown in output growth if the public sector does adjust to reduced external financing, or macroeconomic instability if it does not.

V. CONCLUSIONS

To summarize the results of this analysis, external restraint comes at a high cost in terms of lost output growth. This will happen in a direct manner if the internal adjustment relies on a cut in public sector investment. Cuts in public sector consumption, in addition to what is already assumed in the base case, are probably no longer really possible on a large scale, public sector savings has already increased a great deal over the last few years. Alternatively, if the government relies on debt issue, private sector investment would fall substantially because of the necessity to raise interest rates. In addition, the interest rate would have to rise to levels that would make further internal debt issue highly destabilizing. The conclusion should be clear. The secondary market quotation of Turkey's debt suggests that external debt is not threatening Turkey's creditworthiness at current levels and anticipated future increases. Internal adjustment is necessary for consistency with inflation targets, but pushing for tighter external policies seems both unnecessary and potentially highly damaging to Turkey's growth prospects and internal balance.

The model simulations developed and presented here are illustrative of the trade-offs involved under structural adjustment. Undoubtedly, the financing needs commensurate with larger public sector deficits generated high medium term inflation and real interest rates. But the thrust of the program was growth-oriented centering around export performance and the ability to keep savings and investment rates up. Fiscal policy played a key role in the process through an increase in a well-directed public expenditure program which supported the private sector through necessary infrastructure investments and special incentives and credit for export and investment. A key factor, of course was the substantial excess capacity inherited from the heavy investments made in the 1970's which allowed for a quick improvement in output and exports once the exchange rate was aligned.

- Anand, R. and S. van Wijnbergen (1987), "Inflation and the Financing of Government Expenditure in Turkey: an Empirical Analysis", mimeo, World Bank.
- Anand, R. and S. van Wijnbergen (1988), "Export Incentives, Exchange Rate Policy and Export Growth in Turkey", in process, World Bank.
- Anand, R., A. Chhibber, R. Rocha and S. van Wijnbergen (1988), "External Debt, Fiscal Policy and Sustainable Growth in Turkey: an Empirical Analysis", mimeo, World Bank.
- Bean, C. (1984), "The Estimation of "Surprise" Models and the "Surprise" Consumption Function", forthcoming, Review of Economic Studies.
- Celasun, M. and D. Rodrik (1987), ***, Forthcoming, NBER and University of Chicago Press
- Chhibber, A. and S. van Wijnbergen (1988): "Public Policy and Private Investment in Turkey", mimeo, World Bank.
- Cohen, D., (1985), "How to evaluate the Solvency of an Indebted Nation", Economic Policy, vol. I.
- Cohen, D. (1987), "External and Domestic Debt Constraints of LDCs: a Theory with Numerical Applications to Brazil and Mexico", World Bank Quarterly Economic Review.
- S. van Wijnbergen, R. Anand and R. Rocha (1988), "Inflation, External Debt and Financial Sector Reform in Turkey: a Quantitative Approach to consistent Fiscal Policy", mimeo, World Bank.

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- Anand, R. and S.van Wijnbergen (1988), "Export Incentives, Exchange Rate Policy and Export Growth in Turkey", in process, World Bank.
- Anand, R., A.Chhibber, R.Rocha and S.van Wijnbergen (1988), "External Debt, Fiscal Policy and Sustainable Growth in Turkey: an Empirical Analysis", mimeo, World Bank.
- Bean, C.(1984), "The Estimation of "Surprise" Models and the "Surprise" Consumption Function", forthcoming, Review of Economic Studies.
- Celasun, M. and D. Rodrik (1987),***, Forthcoming, NBER and University of Chicago Press
- Chhibber, A. and S. van Wijnbergen (1988): "Public Policy and Private Investment in Turkey", mimeo, World Bank.
- Cohen, D., (1985), "How to evaluate the Solvency of an Indebted Nation", Economic Policy, vol.I.
- Cohen, D. (1987), "External and Domestic Debt Constraints of LDCs: a Theory with Numerical Applications to Brazil and Mexico", World Bank Quarterly Economic Review.
- S.van Wijnbergen, R. Anand and R. Rocha (1988),"Inflation, External Debt and Financial Sector Reform in Turkey: a Quantitative Approach to consistent Fiscal Policy", mimeo, World Bank.

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